GE - Advanced Turbine Systems Program

December 5, 2000

Tom Chance
GE-ATS Program Manager

Tom Dreisbach
GE-Project Development Manager

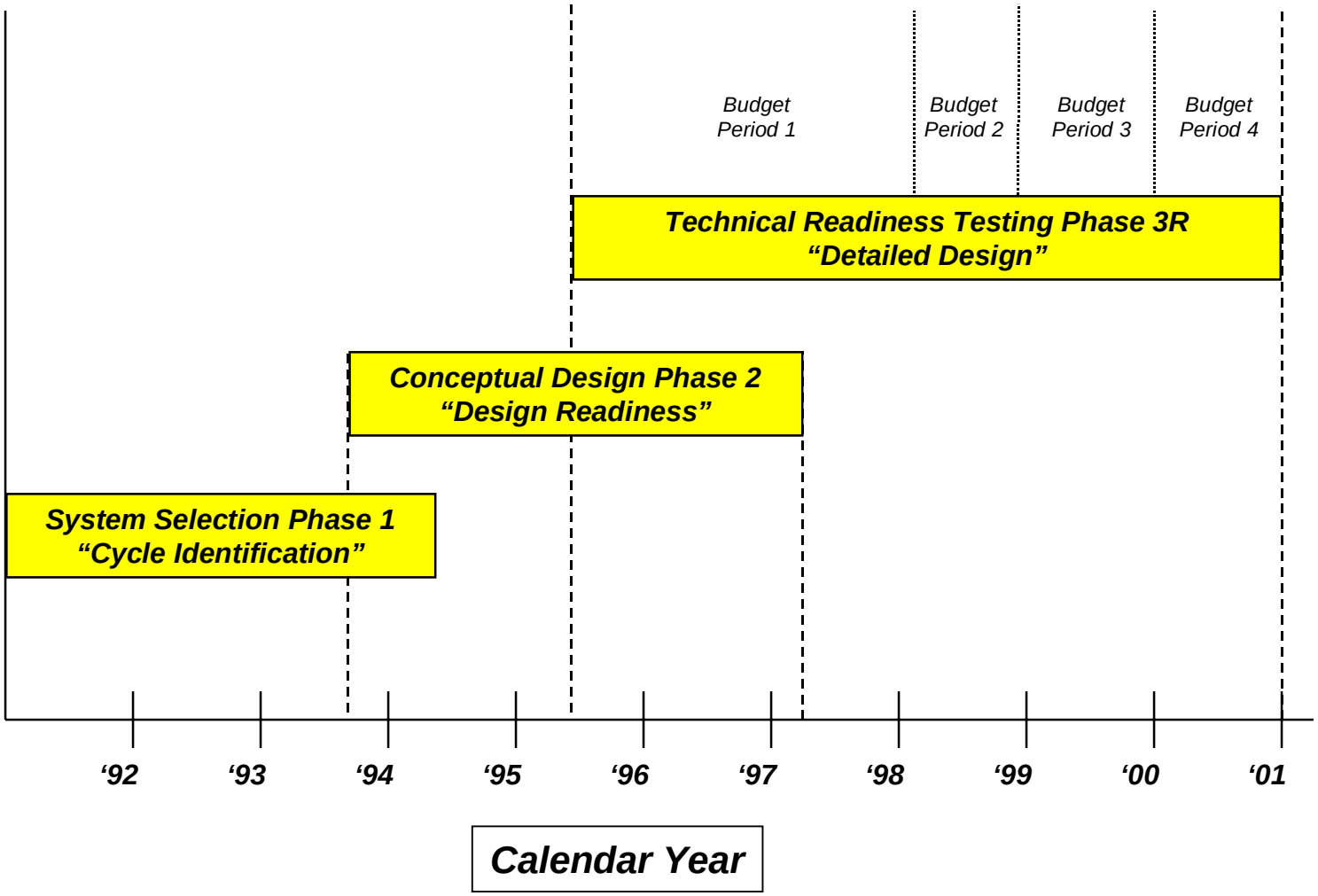
Phil Mooney
Sithe Energies-Project Development Manager

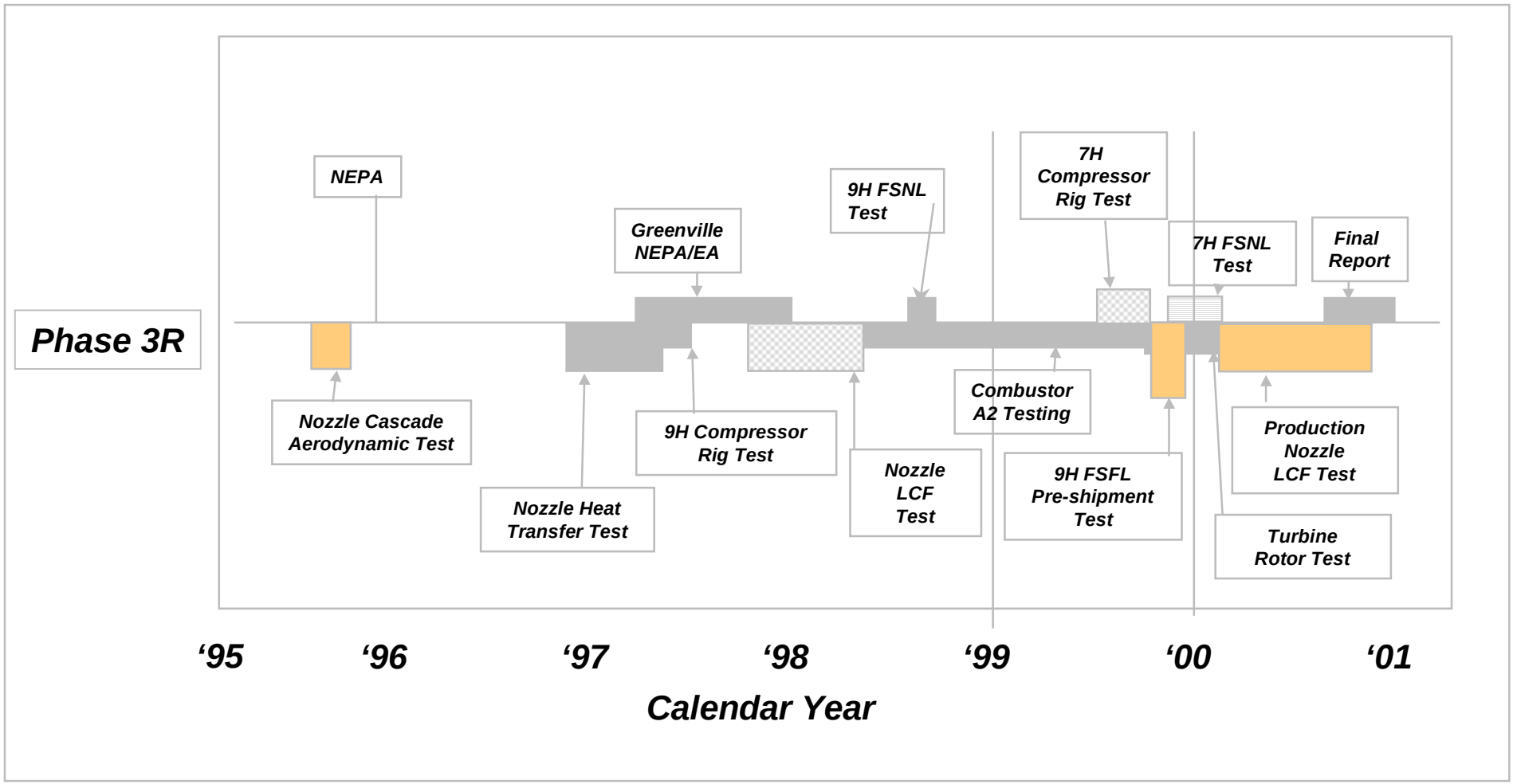
Overview of General Electric's Advanced Turbine Systems Program

Cooperative Agreement Number:	DE-FC21-95MC31176
Contractor:	General Electric Company 1 River Road Schenectady, NY 12345 518-385-2968 518-385-4314 (fax)
Contractor Project Manager:	Thomas F. Chance
Principal Investigators:	Charles S. Cook Chris E. Maslak
DOE Project Manager:	Kanwal Mahajan
Period of Performance:	July 1, 1995 to December 31, 2000

GE/DOE Advanced Turbine Systems Program Goals

- ***Early Selection of an Advanced System Configuration***
- ***Focus on Incorporating the Most Advanced Technology From Start***
- ***Cycle Selected used Steam Cooling and Steam Cycle Integration***
  - *— Highest Possible Firing Temperature*
  - *— Combustion Temperature Consistent With <10ppm No_x*
    - *Without Exhaust Cleanup*
  - *— 60% (LHV) Combined Cycle Efficiency*
  - *— Reduced Cost of Electricity*


Budget Period 1
Budget Period 2
Budget Period 3
Budget Period 4
Technical Readiness Testing Phase 3R
"Detailed Design"
Conceptual Design Phase 2
"Design Readiness"
System Selection Phase 1
"Cycle Identification"
'92
'93
'94
'95
'96
'97
'98
'99
'00
'01
Calendar Year


Phase 3R
NEPA
Greenville NEPA/EA
9H FSNL Test
7H Compressor Rig Test
7H FSNL Test
Final Report
Nozzle Cascade Aerodynamic Test
9H Compressor Rig Test
Nozzle Heat Transfer Test
Nozzle LCF Test
Combustor A2 Testing
9H FSFL Pre-shipment Test
Production Nozzle LCF Test
Turbine Rotor Test
'95
'96
'97
'98
'99
'00
'01
Calendar Year

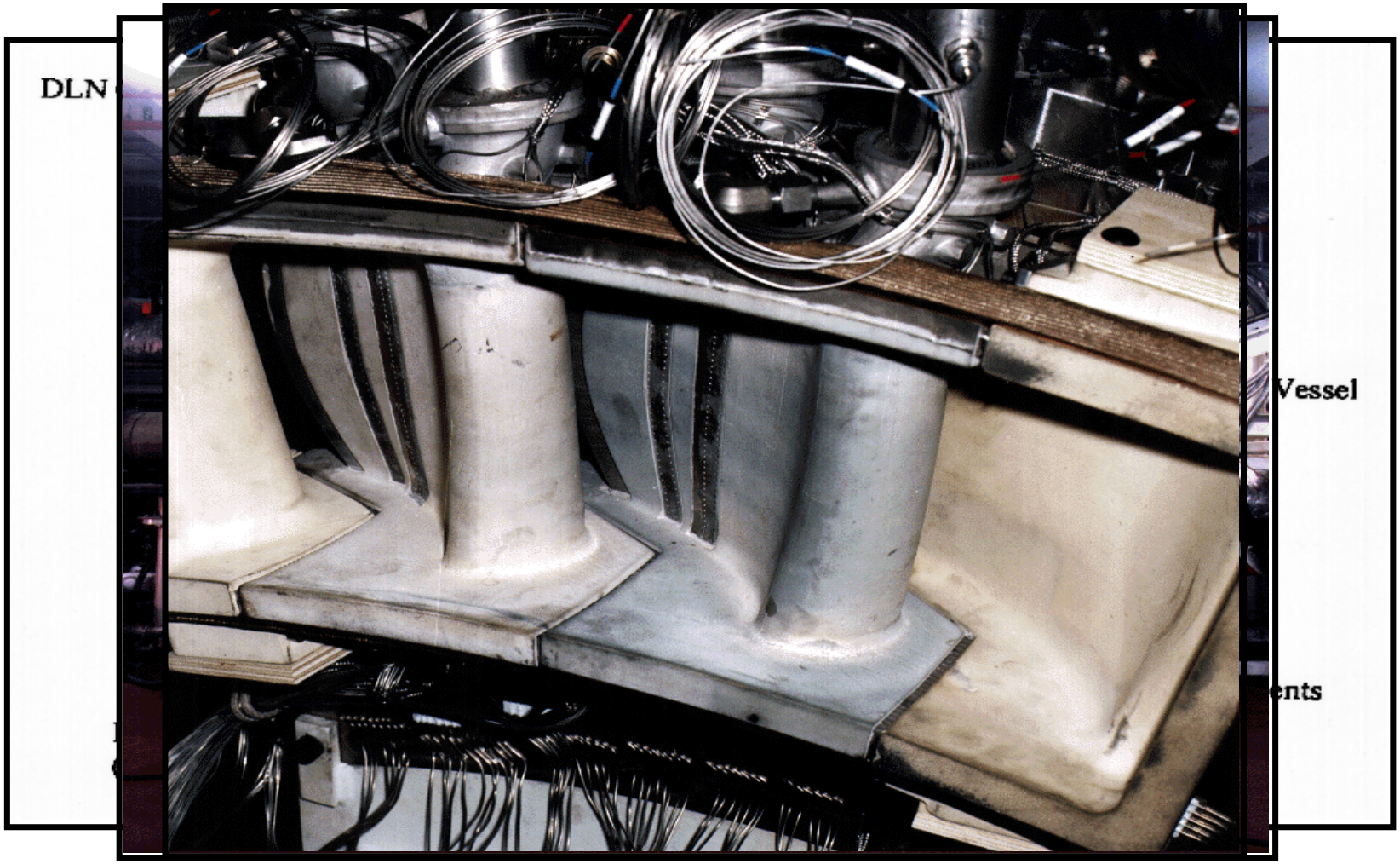
Machine and Component Testing Highlights - 2000

- ***7H FSNL Test, Greenville, SC***
  - *Testing Completed in February, 2000*
  - *7H Design Validated, Met All Test Program Goals*

- ***H System Combustor Testing, GEAE-Evendale, OH***
  - *Development Continued in the Full-Scale Rig*
  - *Focused on Meeting ATS Emissions Goals*
  - *Wrapping-Up Testing 7H, Working on Margin for Single-Digit NO_x*

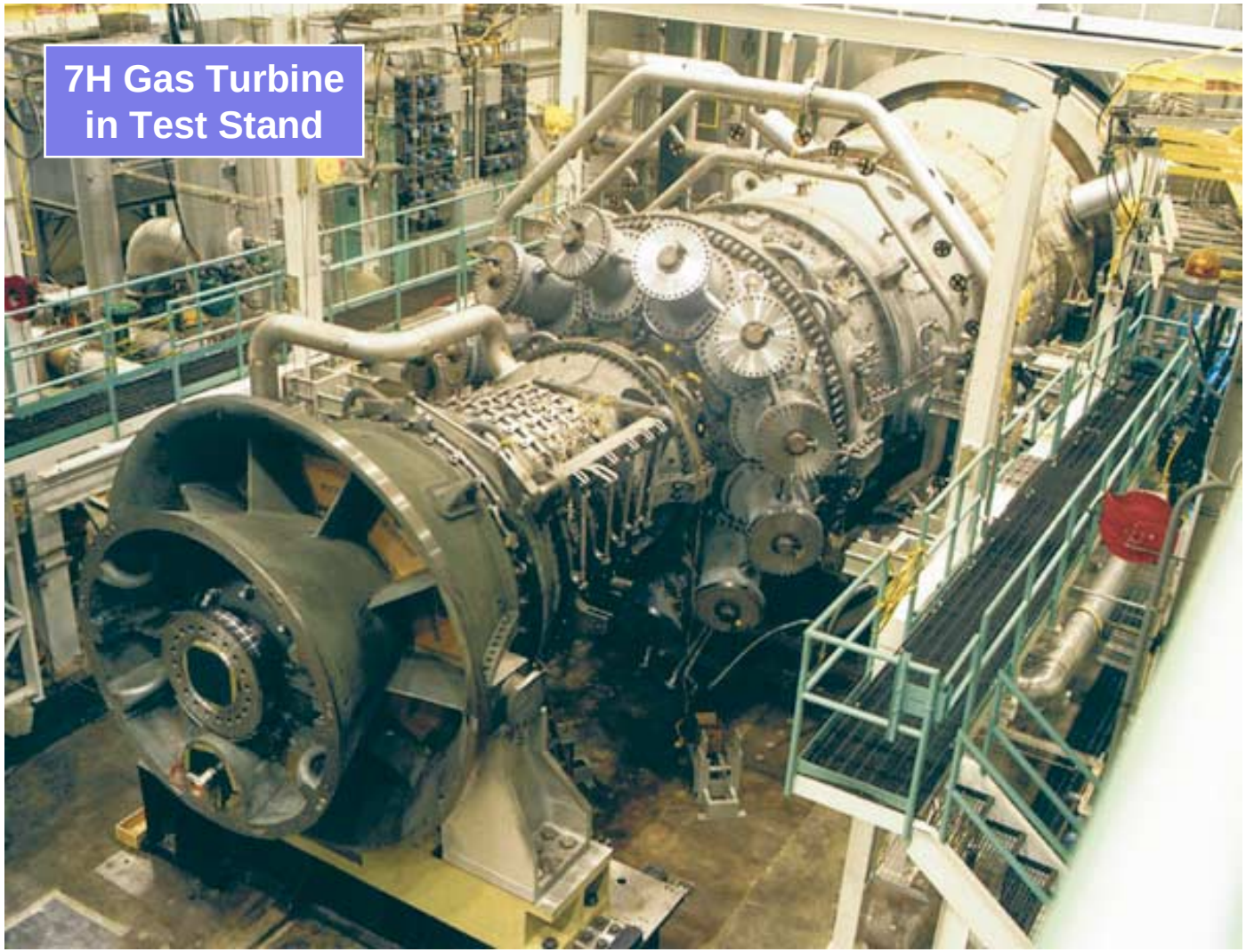
- ***Turbine Rotor Test Rig, GEPS-Schenectady, NY***
  - *Production Steam Delivery Hardware (3 Stages)*
  - *Ran Cyclic Loading Profile at ATS G-Loads and Temperatures*
  - *Demonstrated Cyclic Endurance and Heat Transfer Characteristics Under H Engine Operating Conditions*

Full-size Stage 1 Nozzle Cascade Test

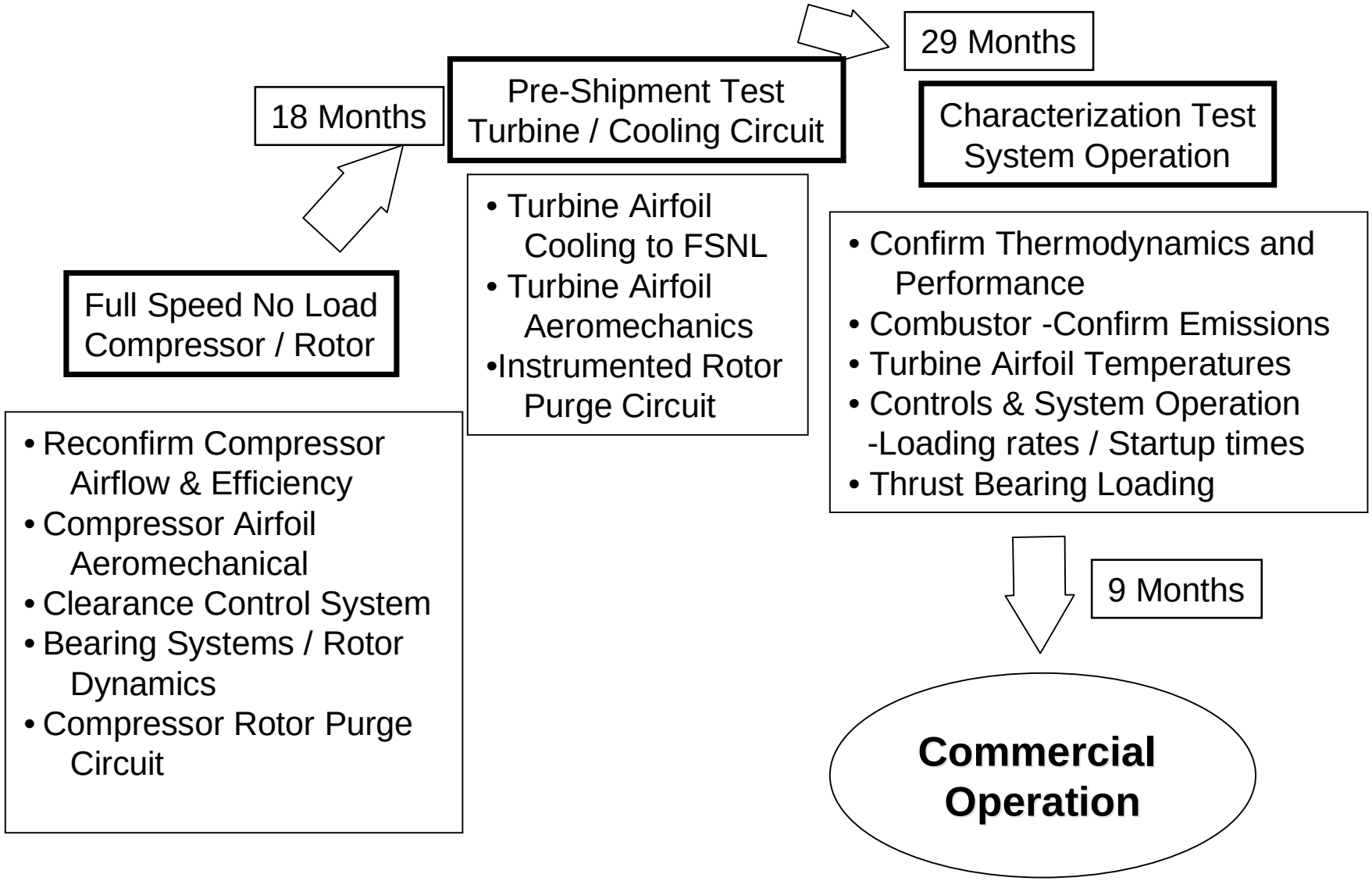


Aerodynamics - Heat Transfer - Endurance Demonstrated

“H” Technology - 7H Full Speed No Load - February, 2000



H Validation Unit Testing

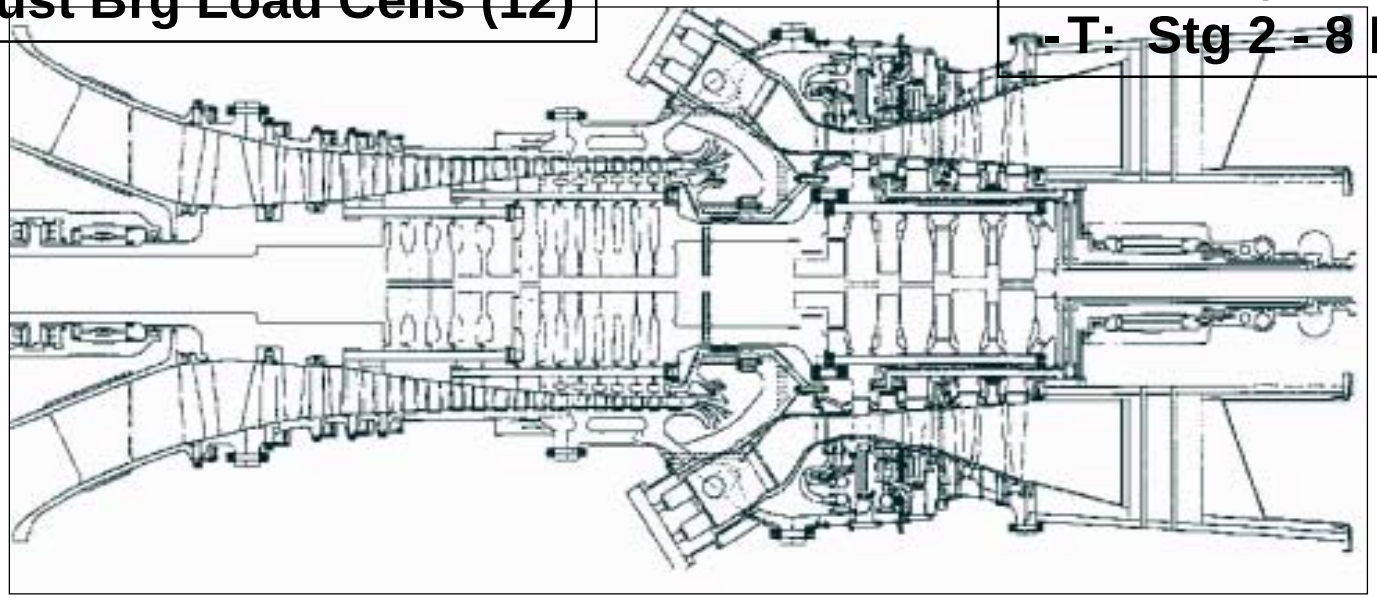


Key FSNL Instrumentation

Sithe INTERNATIONAL INDEPENDENT POWER PRODUCER

Special Instrumentation

- Inlet T's
- Speed Pickups
- Inlet Flow
- Thrust Brg Load Cells (12)
- Blade Tip Clearance
- Turbine W/S Temps
  - C: 3 Stgs - 4/Stage
  - T: Stg 2 - 8 Loc.



- Airfoil Strain Gages (74)
- Turbine Cavity Pressures
- Exhaust Temps
- Dynamic Pressure (11)
- Light Probes (40)
- Bearing Seismics
- Rotor Thermocouples (54)
- Diffuser 5 x 5 PT Rakes
- Spark Plugs
- Diff Static Pressure (21)
- Flame Detect (21)

Results of FSNL-1 Tests - 7H and 9H

Compressor Performance and Airflow Exceeds Expectation

Compressor Aeromechanics Confirm Rig Test Results

Demonstrated Clearance Control System

Validated Rotor Dynamics and Vibration Levels

Mark VI Control of Gas Turbine

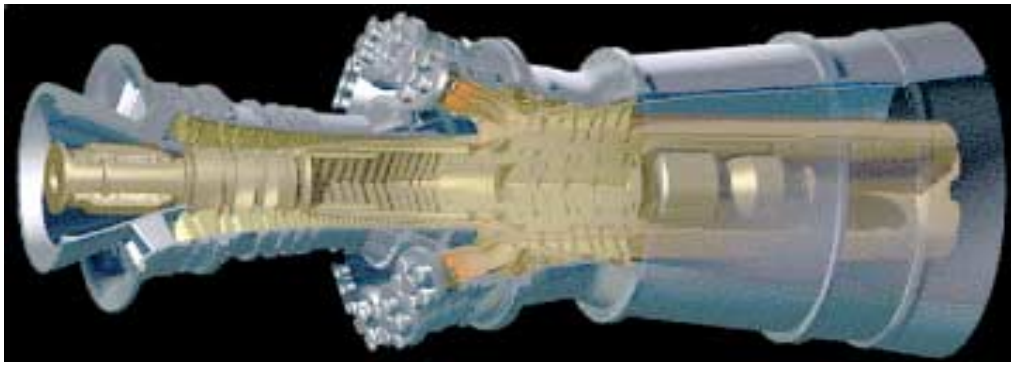
Turbine Bucket Cooling Validated (@ 9H Pre-Shipment Test)

Met All Test Objectives

9H FSFL Instrumentation Summary

Gas Turbine Component	
Turbine Shaft	338
Turbine Buckets	206
Turbine Rotor Steam Cooling	30
Compressor Rotor	144
Compressor Stator	18
Structures	144
Bearings	24
Turbine Nozzles	804
Turbine Shrouds	222
Turbine Secondary Flow	310
Combustor	261
Performance	461
Flange to Flange Total	**3562**

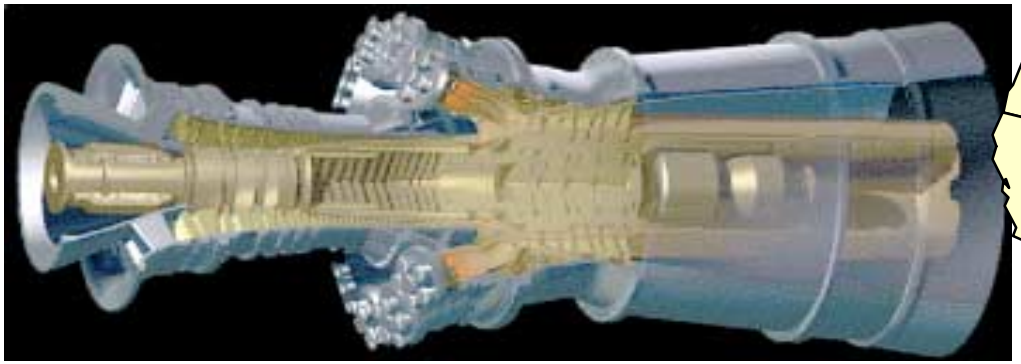
9H System

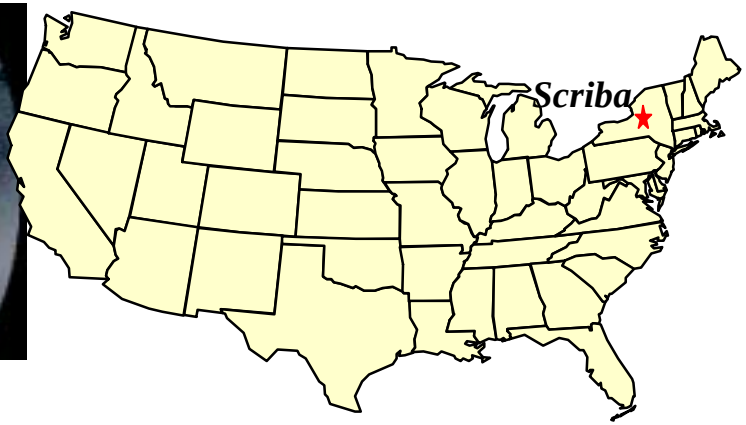


- 109H Rating: 480MW

- Launch Site: Baglan Bay, Port Talbot, Wales, UK
  - Jointly Developed Plant with British Petroleum - AMOCO
  - 1 x 109H Power Plant + LM2500 Cogen
  - S36 (Construction Permit) Approved
  - Begin Construction 2000
  - Field Testing 2002
  - Commercial Operation 2002

7H System





- 107H Rating: 400MW

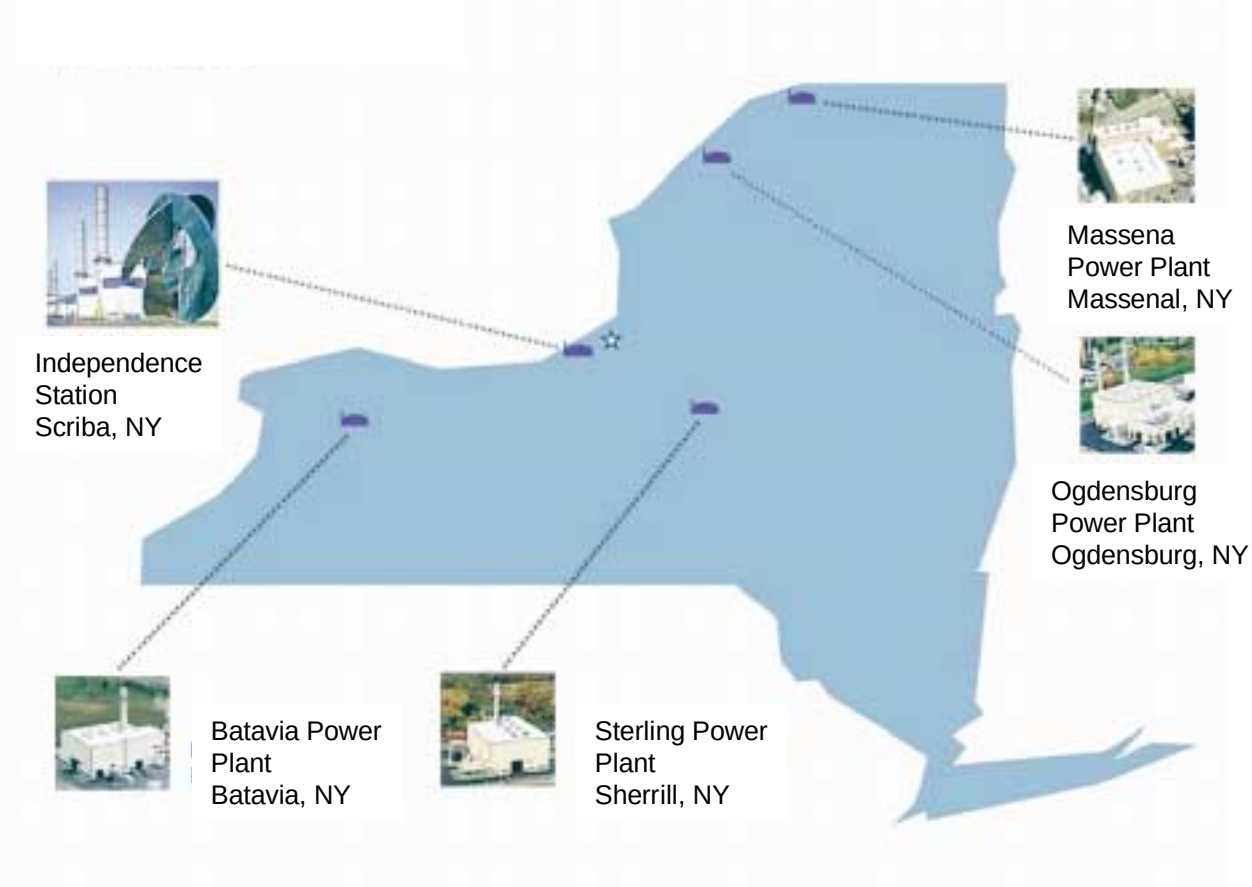
- Launch Site: Heritage Station, Scriba, NY, USA
  - Jointly Developed Plant with Sithe Energies
  - 2 x 107H Power Plant
  - Plant Permitting Underway
  - Begin Construction 2001
  - Field Testing 2003
  - Commercial Operation 2004

Sithe

- Leading independent power producer that develops, acquires, owns, and operates facilities worldwide
- North American Market Focus
- Over 4300 MW in operation
- Over 2600 MW in construction
- Over 3700 MW in advanced development in Northeast
- Leader in producing clean, reliable energy

Sithe in New York State

5 Operating Cogeneration Plants
Hospital, Milk Coop, Oneida Silverware, Alcoa, Alcan

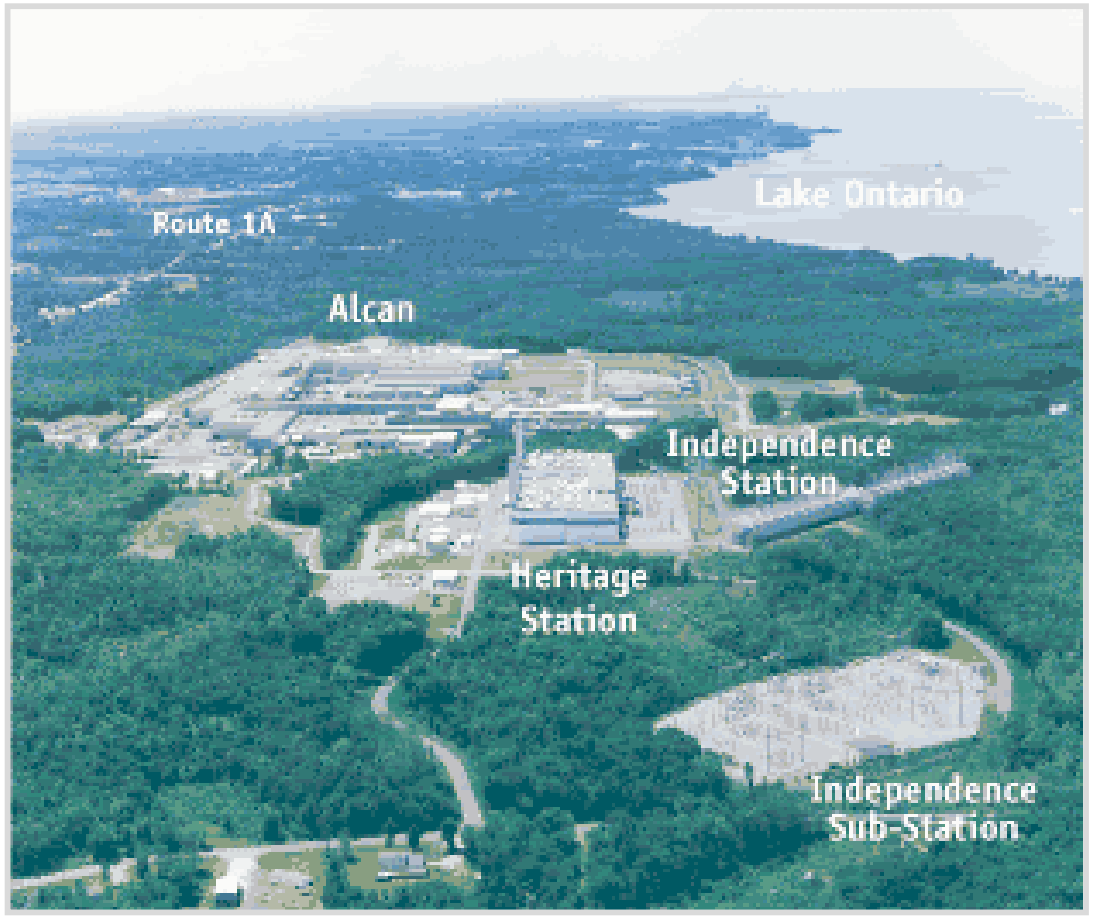


- Strong presence in NYS
- Familiarity with NYS Market
- Active Community Involvement

Site Characteristics

- Existing Sithe Independence Station
- 190 acres
- Existing Infrastructure
  - Electric, HP gas, water supply & discharge
- Adjacent to Lake Ontario
- Industrial zone
- Community Plan Targets Energy Industry

Scriba, New York



Facility Characteristics

- Two 400 MW 107H Power Blocks
- Natural Gas Fired
- Wet Cooling Tower
- 2ppm NOx, 3ppm CO
- Lowest NOx per btu of fuel
- Discharge to Lake via existing outfall pipe
- Carefully fit within extensive system of wetlands on site.